

9. An Experimental Investigation of the Migration of Woodcock breeding in the West of Ireland. By S. R. DOUGLAS, M.R.C.S., L.R.C.P. Lond., Captain I.M.S. (retired), F.Z.S., 1st Assistant Bacteriological Department, Medical Research Committee, National Insurance Act.

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To ascertain if the woodcock breeding in the British Islands are migratory in their habits has from time to time been the subject of investigations. These investigations have usually taken the form of marking a number of nestling birds, generally by means of metal rings placed round the legs, and collecting the data furnished by the recovery of these birds in various localities.

The best known of such experiments which have been published up to the present time are :—

- (i.) That made on the Duke of Northumberland's estate at Alnwick and reported by Lord William Percy in 'Country Life,' 1909, Feb. 27th.
- (ii.) That made at Baron's Court, Co. Tyrone, and reported by Hamilton in 'The Field,' 1908, Oct. 17th, p. 717, and Oct. 24th, p. 745.
- (iii.) Other references dealing with smaller experiments are to be found in 'British Birds,' vol. iv. p. 280, and vol. v. p. 186; and also in the report of the Aberdeen University Bird Migration Inquiry.

The experiment, the details of which are here given, has been carried out at the instigation of Col. W. W. Ashley, M.P., of Broadlands, Romsey, Hampshire, and the Palmerston Estates, Co. Sligo, who has most kindly given me permission to publish the results obtained up to the present time.

Before giving the actual details of the numbers of birds marked year by year and the numbers recovered, etc., it is necessary to describe accurately the situation where the experiment was carried out, and to give a description of the breeding-grounds, together with a few notes on the nesting-habits of woodcock in this locality.

Col. Ashley's property consists of a strip of country lying between the Ben Bulbin range and the southern shore of the Bay of Donegal in the County of Sligo, the position being almost exactly  $8^{\circ} 30'$  west and  $54^{\circ} 30'$  north.

It is composed largely of small holdings which have been vested in the tenants under the various Land Acts, but it also contains a considerable extent of bog-land and some fine coverts made up of both hard and soft wood trees. These woods during the winter months harbour a considerable number of woodcock,

affording excellent sport: in exceptional years large bags have been made, for instance, in January 1892, 92 and 98 cock were shot on consecutive days; the more usual bags, however, are about 120 cock for two guns in a week's shooting.

Woodcock have only comparatively recently nested regularly in these parts, for, from information received from a former keeper of Col. Ashley's, Mr. R. Bracken, who had been brought up in this part of the country and who has several relatives keepers on neighbouring estates, it appears quite certain that a woodcock's nest was considered the greatest rarity before the year 1875. Since that date they have become more and more numerous. On Col. Ashley's property, and especially in respect of the principal breeding-ground described below, woodcocks' nests were practically unknown before the year 1900.

The principal breeding-ground is a wood about 150 acres in extent, situated about the centre of the property. This wood, which was planted about 1830, consists almost entirely of Scotch and Maritime fir, and lies within half a mile of the sea. The soil is very sandy, and the ground between the wood and the sea-shore is occupied by sand dunes covered with bent grass.

That part of the wood where most of the woodcock nest is occupied by well-grown pine-trees, and is practically destitute of any undergrowth, the ground between the tree-trunks being thickly carpeted with moss and fallen pine-needles, with here and there heaps of fallen sticks.

The nests are most frequently placed at the foot of a well-grown tree; they consist of a saucer-shaped depression in the moss with no more lining than a few pine-needles, and are often partly shielded from view by some fallen dead wood.

The usual number of eggs laid is four, but nests containing five have been found. One egg in the clutch frequently fails to hatch out. The average of 50 nests is now found every breeding-season in this wood.

The nesting-season commences in March, a nest with eggs having been found as early as the fifth of this month, and continues throughout the summer until the end of July or the beginning of August; however, most of the young are hatched in the months of April, May, and the early part of June.

The young birds grow very rapidly after being hatched out, and within two or three days leave the locality of the nest, so that the marking of the young birds has to be carried out very soon after they are hatched.

No definite proof of a woodcock raising two broods in the year has been obtained, but all the keepers are of the opinion that this at any rate occasionally happens.

The young birds remain near the place of their birth until about the middle of September. About this time, however, they practically all disappear until the middle of October, when a number of birds are again seen, and these appear to constitute the regular winter inhabitants of the different coverts.

The experiment was commenced in the year 1910, and has been continued every year since then. The number of marked birds that have been recovered varies considerably in different years, this being mainly due to there being practically no shooting during certain seasons.

For the first three years the birds were marked by having a single ring placed on one leg; this ring was made of aluminium and stamped with the lettering "A.C. 10" in the year 1910, while in 1911 and 1912 the lettering was "W.A. Sligo, 1911," and "W.A. Sligo, 12" respectively.

After the year 1912 two rings were used, one ring being placed on each leg. The reason for this was that it was ascertained that the postal authorities would not deliver letters which were addressed with initials only, a fact that may account for the scarcity of information from outside sources received in the earlier years of the experiment.

The lettering on these rings was "W. Ashley" on the one ring, and on the other "Sligo 13"-14"-15"-16," according as the year was 1913, 1914, 1915, or 1916.

The following table gives the number of birds marked and the lettering on the rings for each year:—

TABLE I.

Date.	No. of birds marked.	Lettering on rings.
1910.	33	One ring, "A.C. 10."
1911.	48	One ring, "W.A. Sligo, 1911."
1912.	50	One ring, "W.A. Sligo, 12."
1913.	50	Two rings, "W. Ashley" & "Sligo 13."
1914.	50	Two rings, "W. Ashley" & "Sligo 14."
1915.	50	Two rings, "W. Ashley" & "Sligo 15."
1916.	50	Two rings, "W. Ashley" & "Sligo 16."

This gives a total of 331 birds marked in seven years. All these birds with the exception of seven were hatched in the large pine-wood described above. The seven exceptions, consisting of two in 1910, two in 1911, and three in 1912, were young birds taken from nests in some of the outlying coverts.

The total number of marked birds that have been recovered is 55, that is 16.6 per cent.

The following table gives (i.) the number of birds recovered year by year; (ii.) the locality in which they were found; (iii.) the date the bird was marked; (iv.) the date the bird was recovered; (v.) the method of recovery.

In respect to the various names of places on the estate, Classiebawn includes the large pine wood and its immediate

surroundings, Cloonkeen, Carnduff, Bunduff, and Castlegal being the local names of various portions of Col. Ashley's estate, and all of them lie within 3 miles of the principal breeding-ground. To simplify the reading of the table the letter (E.), signifying estate, is placed after these place-names.

For convenience the years are reckoned in shooting-seasons.

In the case of birds recovered outside the estate the approximate distance and bearing are given.

TABLE II.

Year. Aug. 1st to July 31st.	No. of birds recovered and locality.	Date the bird was marked.	Date and method of recovery.
1910-1911.	1, Hazlewood, an estate 10 miles to the south.	1910.	Nov. 1910. Shot.
	1, Cloonkeen (E.).....	1910.	Feb. 1911. Shot.
1911-1912.	1, Castlegal (E.) .....	1911.	Nov. 1911. Shot.
	1, Carnduff (E.) .....	1911.	Nov. 1911. Shot.
	4, Classiebawn (E.).....	1911.	Nov. 1911. Shot.
	1, Castlegal (E.) .....	1911.	Dec. 1911. Shot.
	1, Classiebawn (E.) .....	1911.	Jan. 1912. Shot.
	1, Cloonkeen (E.).....	1911.	Jan. 1912. Shot.
	1, Castlegal (E.) .....	1911.	Jan. 1912. Shot.
	1, Cloonkeen (E.).....	1910.	Jan. 1912. Shot.
1912-1913.	4, Classiebawn (E.).....	1912.	Dec. 1912. Shot.
	3, Cloonkeen (E.).....	1912.	Dec. 1912. Shot.
	1, Cloonkeen (E.).....	1911.	Jan. 1913. Shot.
	1, Classiebawn (E.).....	1911.	June 1913. Found dead.
	1, Classiebawn (E.).....	1910.	June 1913. Found dead.
1913-1914.	1, Classiebawn (E.).....	1911.	Jan. 1914. Shot.
	8, Classiebawn (E.).....	1913.	Jan. 1914. Shot.
	1, Bunduff (E.) .....	1912.	Jan. 1914. Shot.
	1, Bunduff (E.) .....	1913.	Jan. 1914. Shot.
	1, Hazlewood, an estate 10 miles to the south.	1913.	Jan. 1914. Shot.
1914-1915.	1, Morga, Biscay, Spain, about 800 miles due south.	1914.	Nov. 1914. Shot.
	1, Castlegore, Co. Mayo, about 40 miles to south-west.	1914.	Dec. 1914. Shot.
	1, Glencar, Co. Sligo .....	1914.	Feb. 1915. Shot.
	1, Classiebawn (E.).....	1914.	April 1916. Found dead, killed by a hawk.
1915-1916.	3, Classiebawn (E.).....	1914.	May 1916. Found dead, killed by a hawk.
1916-1917.	1, Bridgetown, Co. Donegal, 60 miles to the north-east.	1913.	Nov. 1916. Shot.
	1, Mullins, Co. Donegal, 15 miles to the north-east.	1915.	Nov. 1916. Caught in rabbit- trap.
	1, Classiebawn (E.) .....	1910.	Jan. 1917. Shot.
	1, Classiebawn (E.) .....	1913.	Jan. 1917. Shot.
	1, Classiebawn (E.) .....	1915.	Jan. 1917. Shot.
	6, Classiebawn (E.) .....	1916.	Jan. 1917. Shot.
	1, Carnduff (E.) .....	1914.	Jan. 1917. Shot.
	1, Carnduff (E.) .....	1915.	Jan. 1917. Shot.

Besides these, two other ringed birds have been reported, but were not actually obtained by any responsible person.

One with one ring only was caught by a cat in 1915, and therefore was a bird marked in 1910, 1911 or 1912; the other with rings of the year 1916 is said to have been shot by a poacher in 1916.

On looking over this table the most striking fact is the large number of marked birds which have been recovered on the estate, the actual number being 48 out of the total of 55 birds recovered, and of these no fewer than 33 were obtained either in the large wood forming the main breeding-ground or its immediate vicinity.

Of the seven birds which have been recorded as obtained in other situations three were shot within a radius of ten miles in a southerly direction, two at Hazlewood, and one at Glencar, about 6, 7, and 9 months after being marked.

One was shot at Castlegore, Co. Mayo, which is about 40 miles to the south-west, about six months after being marked. One was noticed in the market-place of Bilbao, having been shot at Morga, in the province of Biscay, Spain, within six months of being marked, the distance in a direct line being about 800 miles.

It is therefore to be noticed that all the birds which have been recovered south of the breeding-place have been obtained within 9 months of their being marked.

Two birds were recovered north of the breeding-place, one about 15 miles to the north-east in the townlands of Mullins, Co. Donegal,  $1\frac{1}{2}$  years after being marked, and the other near Bridgetown, Co. Donegal, 60 miles to the north-east,  $3\frac{1}{2}$  years after being marked.

The small number of birds recovered during the years 1914-1915 and 1915-1916 is accounted for by the fact that owing to the war there was very little shooting in these years.

Table III. (p. 164) gives (i.) the year, (ii.) the number of birds marked, (iii.) the number of birds recovered, (iv.) the date the birds were recovered.

This table is inserted so as to bring out some of the data already given in a more convenient form; one point to which attention may be drawn is that a bird marked in 1910 was shot in Jan. 1917, so that it must have been at least  $6\frac{1}{2}$  years old.

On examining this bird no evidence of old age could be detected, and its weight, which was 13 oz., was rather above the average.

With regard to the weight of woodcock, on two occasions when a considerable number of ringed birds have been obtained, the weights of these birds have been compared with the weights of the unmarked birds obtained on the same day. Thus, on Jan. 2nd, 1914, nine ringed birds and eight unringed birds were shot.

The weights of the nine ringed birds were:—11, 11.5, 11.5, 11.75, 11.75, 12.25, 12.25, 12.75, and 13 ounces respectively, giving an average of 11.97 oz.

TABLE III.

Year.	No. of birds marked.	No. of birds recovered.	Dates the birds were recovered.
1910.	33	5	1, Nov. 1910. 1, Feb. 1911. 1, Jan. 1912. 1, June 1913. 1, Jan. 1917.
1911.	48	13	6, Nov. 1911. 1, Dec. 1911. 3, Jan. 1912. 1, Jan. 1913. 1, June 1913. 1, Jan. 1914.
1912.	50	8	7, Dec. 1912. 1, Jan. 1914.
1913.	50	12	10, Jan. 1914. 1, Nov. 1916. 1, Jan. 1917.
1914.	50	8	1, Nov. 1914. 1, Dec. 1914. 1, Feb. 1915. 1, April 1915. 3, May 1916. 1, Jan. 1917.
1915.	50	3	1, Nov. 1916. 2, Jan. 1917.
1916.	50	6	6, Jan. 1917.

The weights of the eight unringed birds were:—10, 11, 11, 11·5, 11·5, 11·5, 11·75, and 12·25 ounces respectively, giving an average of 11·3 oz.

Again on Jan. 15th, 1917, eight ringed and sixteen unringed birds were shot. The weights of the ringed birds were:—11·25, 12, 12·25, 12·25, 13, 13, 13·5, and 14·25 ounces respectively, giving an average of 12·7 oz.

Those of the sixteen unringed birds were:—10·5, 11·5, 11·5, 11·75, 11·75, 12, 12, 12, 12·25, 12·25, 12·5, 13, 13, 13·25, 13·5, and 14 ounces respectively, giving an average weight of 12·3 oz.

The following day 31 unringed birds gave an average weight of 12·1 oz.

Although these numbers are not great, it is worthy of note that on both occasions the average weight of the ringed birds was greater than that of the unringed birds.

These being the data obtained up to the present time, is it justifiable to draw any conclusions from them?

The first point, and this may be taken as conclusively proved,



is that many of the woodcock which are hatched out in this locality remain there throughout the following winter months.

The second point is that at any rate a proportion of the woodcock hatched out in this locality remain in the neighbourhood for several years, and, even if they at some period or other migrate to other places, they return to nest: this is indicated not only by the recovery of several marked birds during the nesting-season, but also by the fact that on more than one occasion a nesting-bird flushed from the nest has been noticed to be a ringed bird.

The third point is that five woodcock have been recovered in localities situated at various distances south of the breeding-centre, all within a few months of their being hatched out of the egg, and, although the numbers are few, it indicates that some of the birds tend to migrate south in the autumn months.

A fourth point worthy of notice is that the woodcock appears to show a decided preference for a large-sized pine-wood free from undergrowth, as a nesting-ground, to any other type of covert.

The fifth point is that on two occasions a number of ringed birds have given a larger average weight than a number of unringed birds, indicating that the "resident birds" are rather heavier than the winter migrants.

In conclusion, the data already collected point to their being three classes of woodcock in this part of the west of Ireland, namely:—

- (i.) Woodcock that are hatched out and remain in this locality, sometimes for years, that is "resident birds."
- (ii.) Woodcock that are hatched out in this locality and then migrate in a southerly direction.
- (iii.) Woodcock that arrive from the north during the winter months.

These classes are comparable to those into which Eagle Clarke divided the starlings of Shetland.

Finally, let me point out most emphatically that any success which this experiment may have achieved in elucidating the habits of woodcock is largely due to the care and zeal with which Col. Ashley's keepers, Messrs. Jules, Arthur and Walter Bracken have carried out their work. Their knowledge and powers of observation have furnished many of the points of interest recorded in this paper.

